



VIRGINIA COASTAL RESILIENCE MASTER PLAN

Mid-Atlantic Resiliency Exchange
Pre-Meeting Presentation from Virginia

June 14th, 2022

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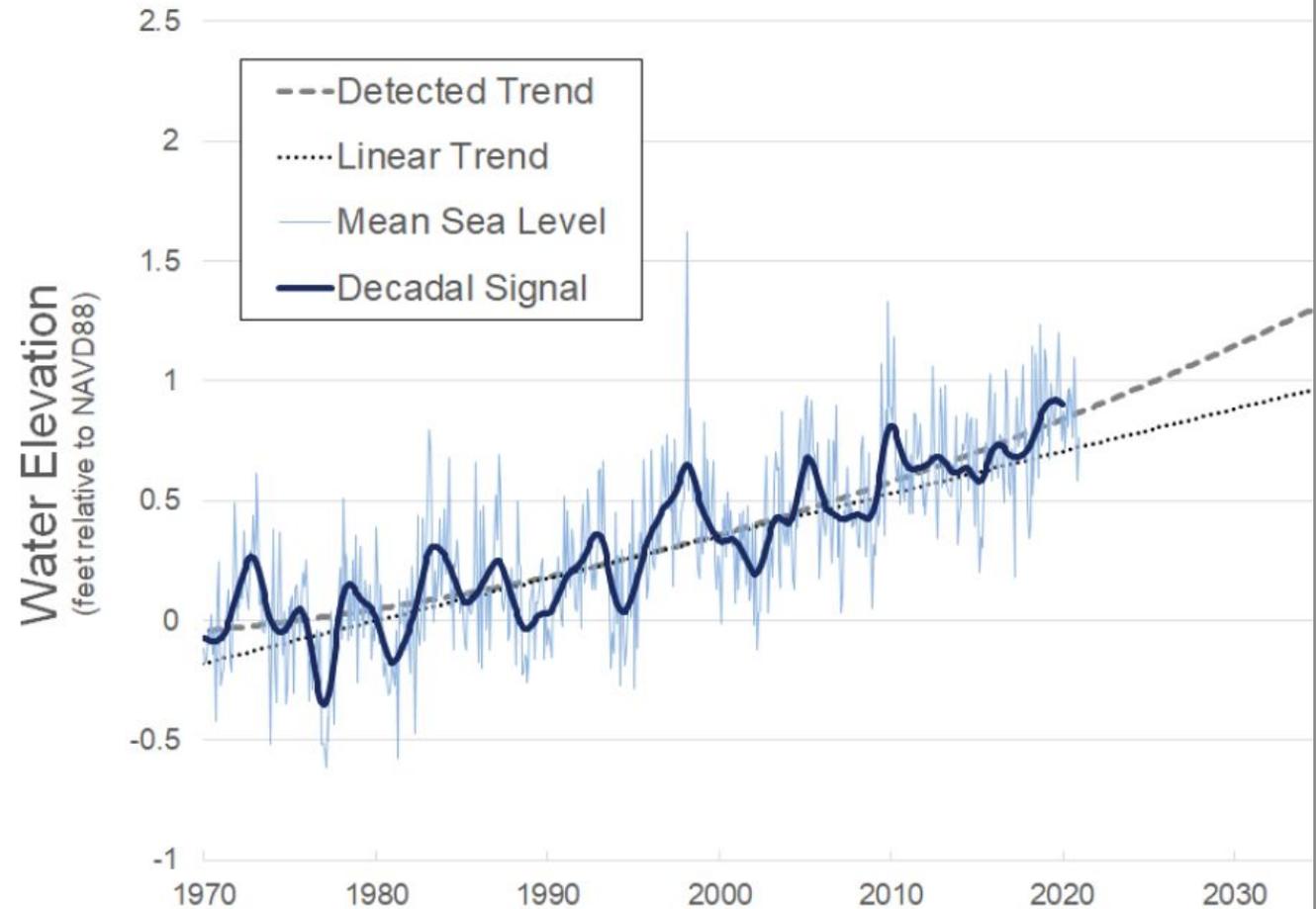


Agenda

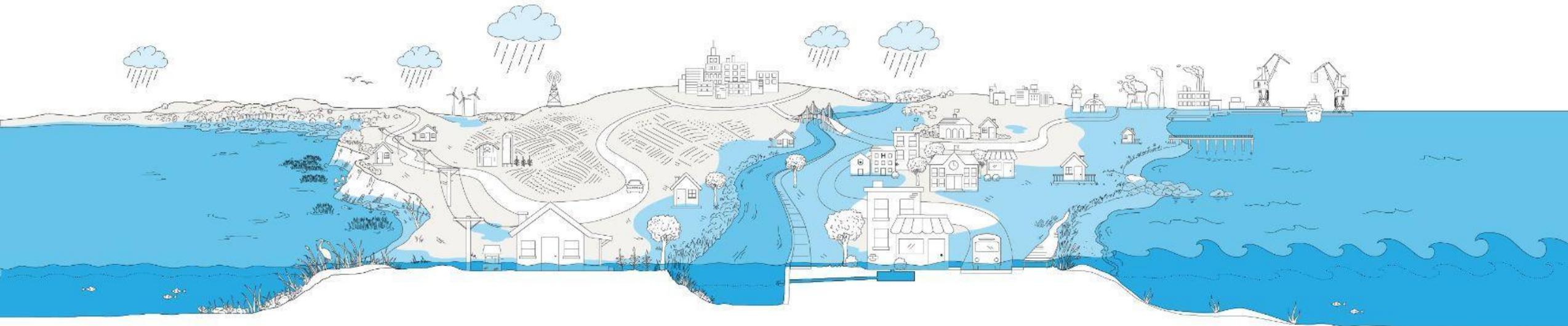
- Why?
- Where?
- What?
- When?
- Who?
- Opportunities for Improvement

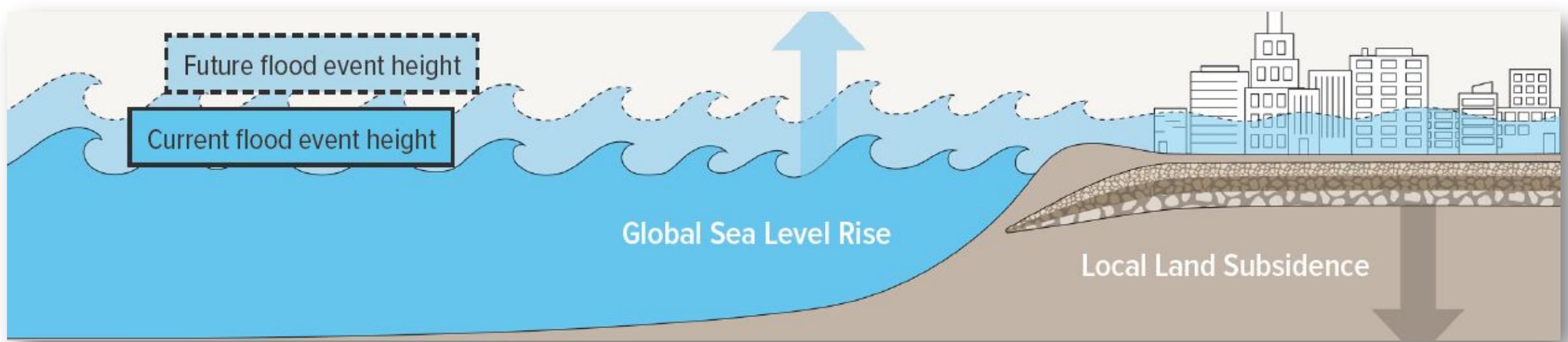
Observed Trends of Accelerating Sea Level Rise at Sewell's Point in Norfolk, Virginia

Adapted from Virginia Institute of Marine Science, 2019. Sea Level Rise Report Cards: Norfolk, Virginia.⁴⁴

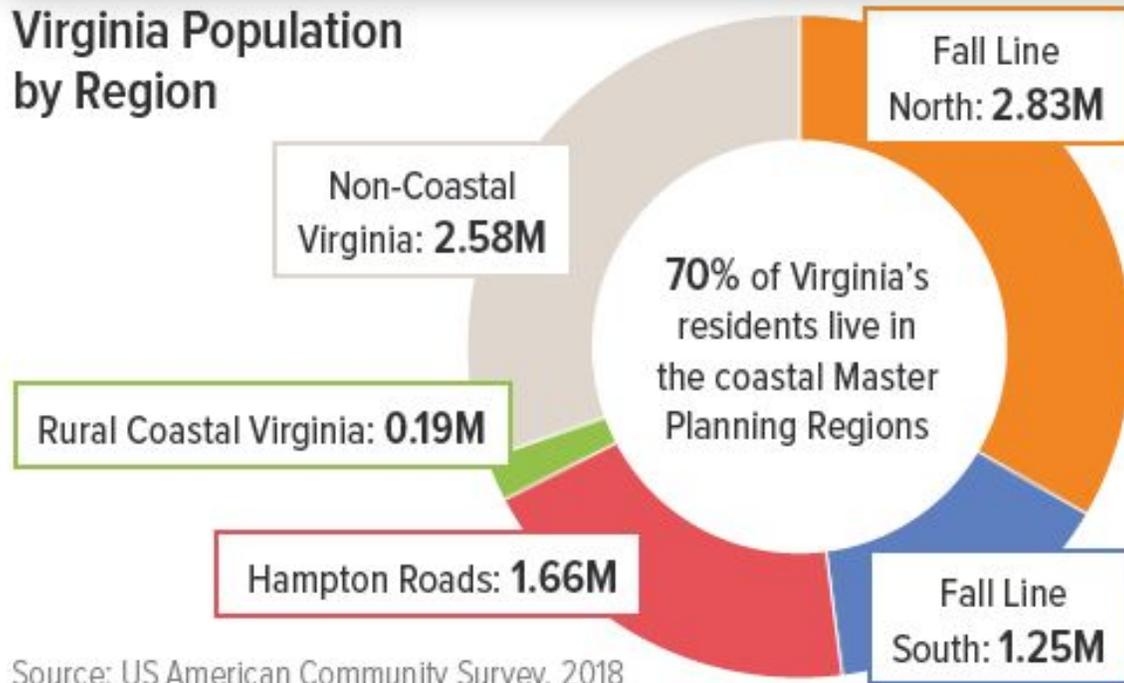


Why?



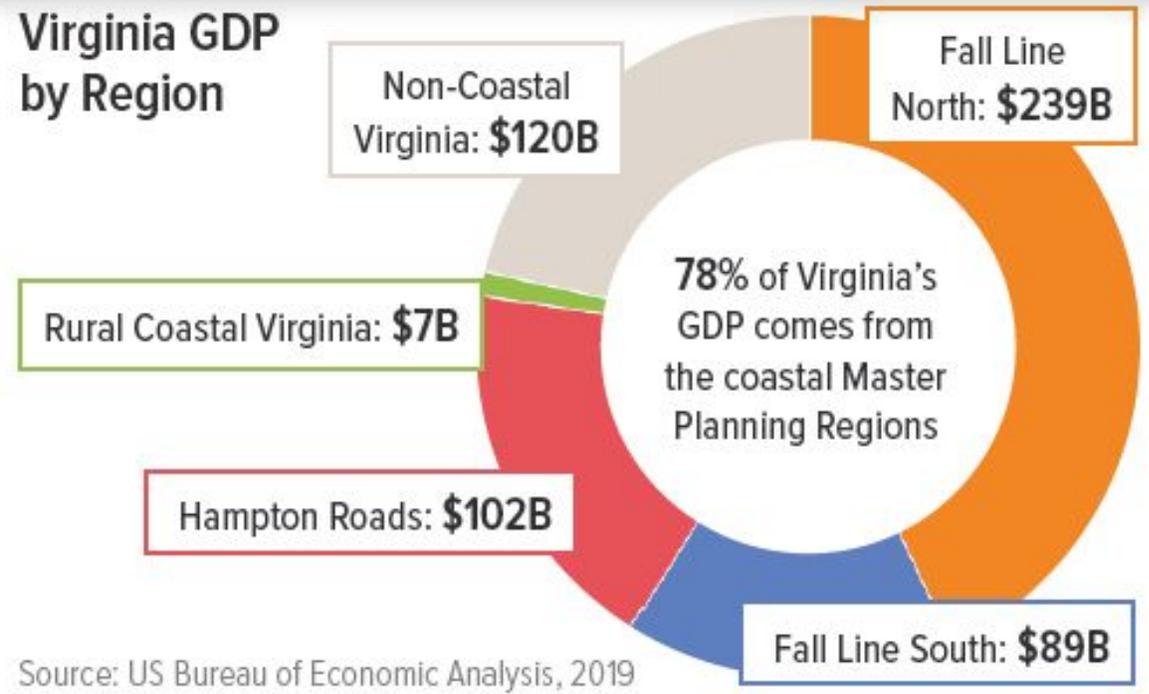


Virginia Population by Region



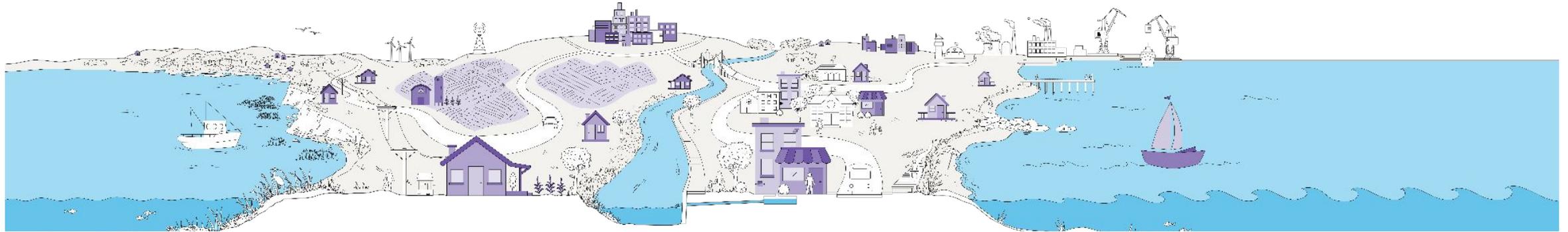
Source: US American Community Survey, 2018

Virginia GDP by Region

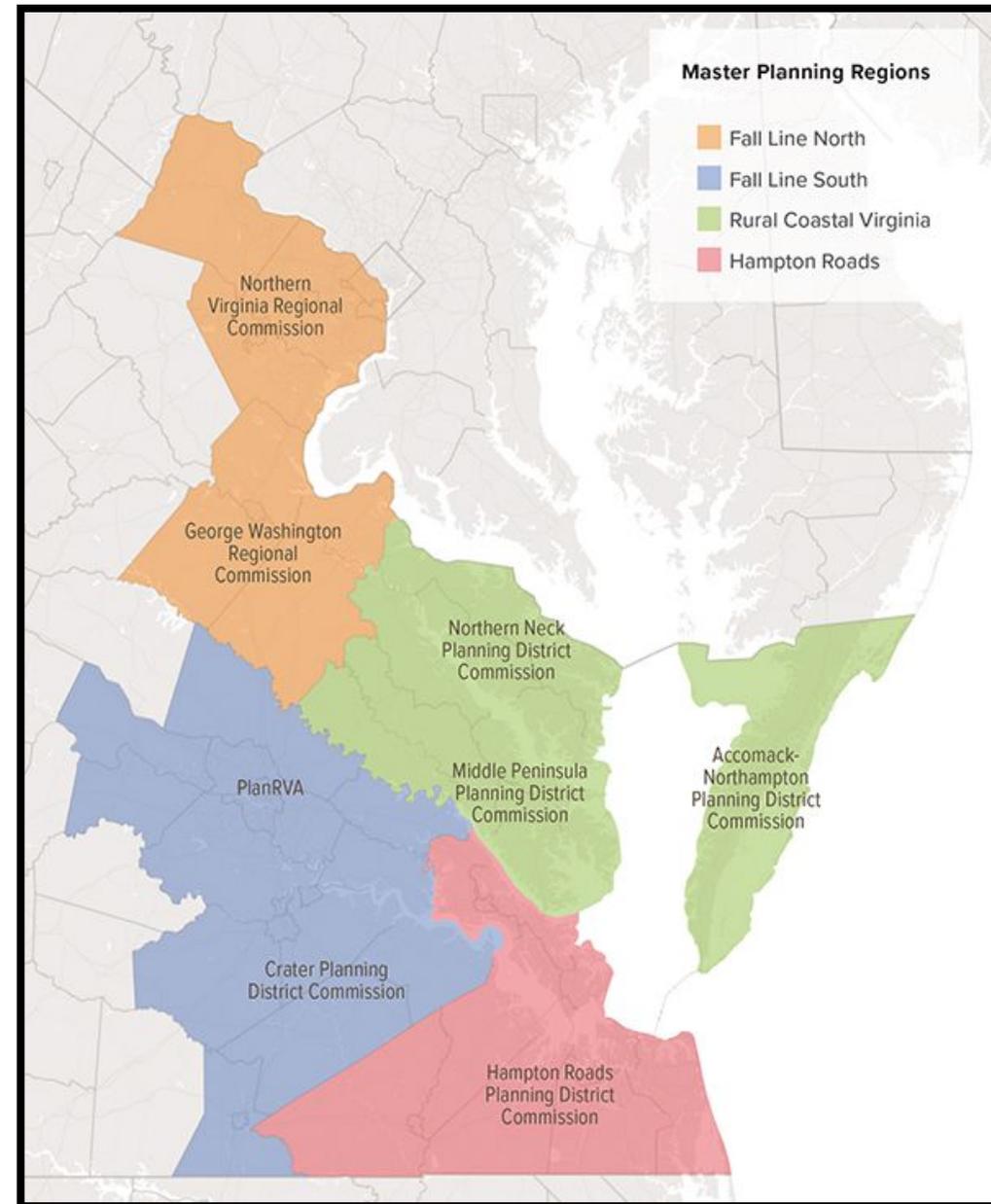
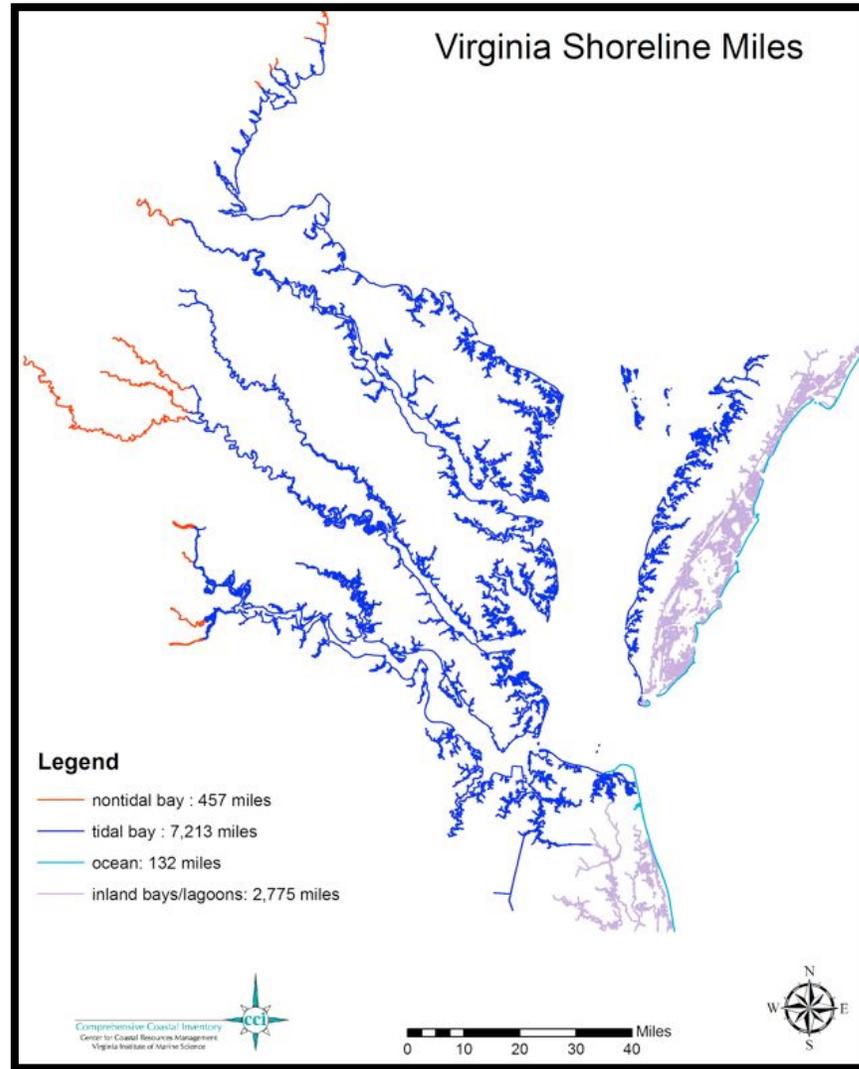


Source: US Bureau of Economic Analysis, 2019

Where?



Coastal Virginia

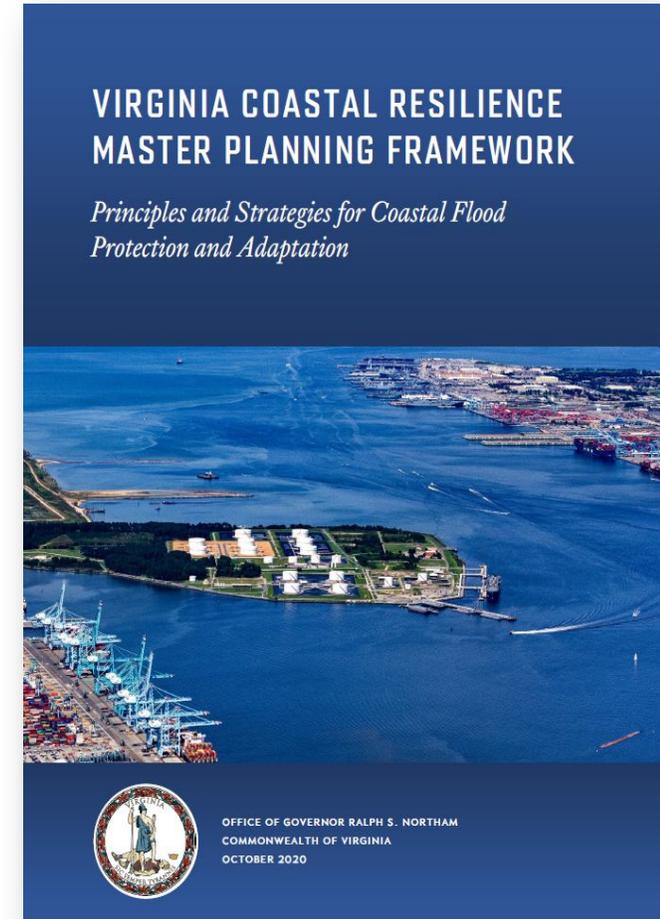


What?



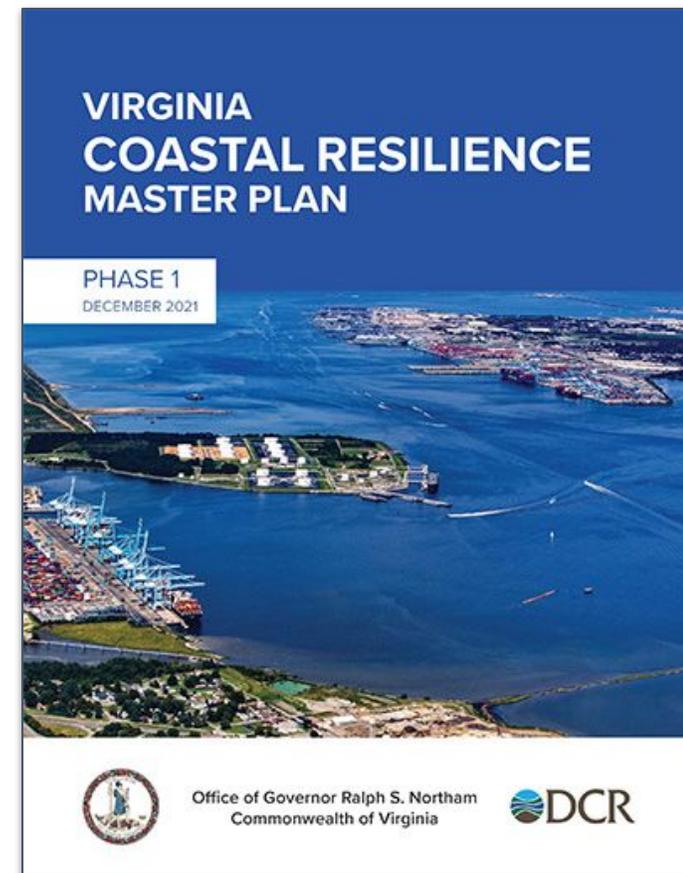
Framework - Goals, Actions, and Outcomes

1. **Identify and prioritize projects** to increase the resilience of coastal communities, including both built and natural assets at risk due to flooding and sea level rise
2. **Establish a financing strategy**, informed by regional differences and equity considerations
3. **Incorporate and promote climate change projections** into Commonwealth's programs addressing coastal adaptation and protection
4. **Coordinate** state, federal, regional, and local coastal region adaptation and protection efforts



Phase 1 Accomplishments

- Determine the consequences of inaction.
- Establish a project database.
- Identify where the Commonwealth can support.
- Build a foundation for continued planning and partnership.



Virginia Coastal Resilience Master Plan



dcr.virginia.gov/crmp/

Virginia Coastal Resilience Master Plan, Phase 1 Dec 2021

Scope

- Coastal Hazard Assessment
- Project Database
- Funding Needs Assessment
- Outreach and Engagement

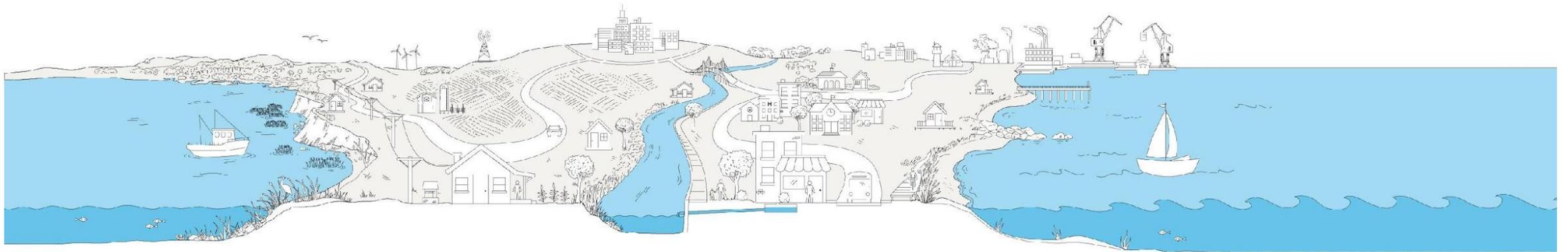
Schedule

- NTP – Mar 2021
- Phase 1 Release – Dec 2021

Budget

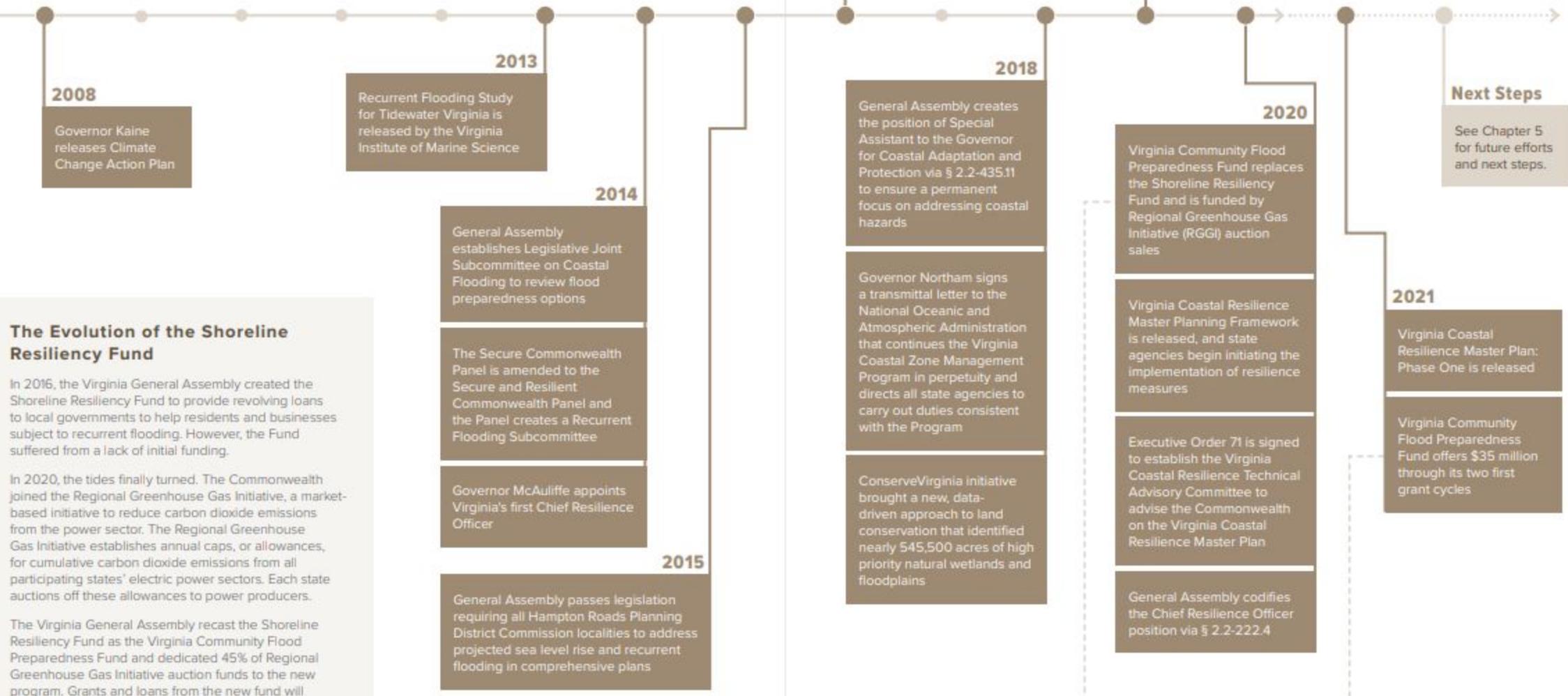
- \$1.5M
- Community Flood Preparedness Fund

When?



A Continuation of Efforts

Since 2008, the Commonwealth has attempted to lead a coordinated planning process to fill unmet and emerging resilience needs. While the state has made headway, building upon the previous work of multiple administrations, commissions, and studies has proved challenging. These cumulative efforts underscore the need for a unified coastal resilience strategy in Virginia. This prior work leveraged the creativity and ingenuity of the many coastal communities involved and should be considered as we chart a path forward that is both holistic and inclusive.



The Evolution of the Shoreline Resiliency Fund

In 2016, the Virginia General Assembly created the Shoreline Resiliency Fund to provide revolving loans to local governments to help residents and businesses subject to recurrent flooding. However, the Fund suffered from a lack of initial funding.

In 2020, the tides finally turned. The Commonwealth joined the Regional Greenhouse Gas Initiative, a market-based initiative to reduce carbon dioxide emissions from the power sector. The Regional Greenhouse Gas Initiative establishes annual caps, or allowances, for cumulative carbon dioxide emissions from all participating states' electric power sectors. Each state auctions off these allowances to power producers.

The Virginia General Assembly recast the Shoreline Resiliency Fund as the Virginia Community Flood Preparedness Fund and dedicated 45% of Regional Greenhouse Gas Initiative auction funds to the new program. Grants and loans from the new fund will

Planning for a Coastal Resilience Master Plan



Commonwealth of Virginia
Office of the Governor

Executive Order

NUMBER TWENTY-FOUR (2018)

INCREASING VIRGINIA'S RESILIENCE TO SEA LEVEL RISE AND NATURAL HAZARDS

Importance of the Initiative

Sea level rise, land subsidence, higher average temperatures, more frequent and intense weather events, severe drought, and increased development, have increased risk and will continue to increase and exacerbate risk from natural hazards across the Commonwealth of Virginia. The number of federally declared disasters has steadily increased nationally and in Virginia. The number has experienced a 250 percent increase in federally declared disasters over the past 20 years, including declarations for flooding, hurricanes, severe storms, and wildfire.

The best available science predicts that this trend will continue to worsen. A recent report from the United Nations Intergovernmental Panel on Climate Change states that the world is likely to experience dramatic increases in coastal flooding and severe weather events. Additional studies show that water levels in the Hampton Roads region are now 18 inches higher than they were a century ago, and that they are expected to gain up to five more feet, while the land sinks as much as 7.5 inches, by 2100. That combined rise is faster than anywhere else on the East Coast. The most recent National Climate Assessment reported that the intensity, frequency, and duration of North Atlantic hurricanes, as well as the frequency of the strongest hurricanes, have all increased.

This increase in extreme weather events and natural disasters will continue to have a profound impact on Virginia. It threatens public health and safety, our environment and natural resources, and the economic wellbeing of the Commonwealth, including our ports, military installations, transportation infrastructure, tourism assets, farms, and forests. We must act now to protect lives and property from multiple threats and reduce taxpayer exposure through fiscally responsible planning.

EO24 - Nov 2018



Commonwealth of Virginia
Office of the Governor

Executive Order

NUMBER FORTY-FIVE

FLOODPLAIN MANAGEMENT REQUIREMENTS AND PLANNING STANDARDS FOR STATE AGENCIES, INSTITUTIONS, AND PROPERTY

Importance of the Initiative

Executive Order 24 "Increasing Virginia's Resilience to Sea Level Rise and Natural Hazards," issued in November 2018, set the Commonwealth on a course towards addressing its risk and resilience to natural hazards, including flooding. A key element of that Order required an analysis of flooding and flood preparedness in the Commonwealth. Based on that analysis, the Commonwealth must establish new policies and directives to ensure that necessary actions are taken to protect state property from the risk of floods.

Background

Flooding remains the most common and costly natural disaster in Virginia and the United States. With more than 100,000 miles of streams and rivers, as well as 10,000 miles of estuarine and coastal shoreline, Virginia's flood risk is statewide, comes in many forms, and is increasing because of climate change and increased development in flood-prone areas. In 1987, in order to improve Virginia's flood protection programs and to consolidate all related programs in one agency, responsibility for coordination of all state floodplain programs was transferred from the State Water Control Board to the Department of Conservation and Recreation (DCR). Section 10.1-602 of the *Code of Virginia* names DCR as the manager of the state's floodplain program and the designated coordinating agency of the National Flood Insurance Program (NFIP). The Code stipulates that the Director of DCR or his designee shall serve as the State Coordinator for the NFIP.

DCR's Floodplain Management Program was created to minimize Virginia's flood hazards. In particular, it aims to prevent loss of life, reduce property damage, and conserve natural and beneficial values of state rivers and coastal floodplains. To achieve these goals, DCR promotes

EO45 - Nov 2019

VIRGINIA COASTAL RESILIENCE MASTER PLANNING FRAMEWORK

*Principles and Strategies for Coastal Flood
Protection and Adaptation*

OFFICE OF GOVERNOR RALPH S. NORTHAM
COMMONWEALTH OF VIRGINIA
OCTOBER 2020

Framework - Oct 2020



Commonwealth of Virginia
Office of the Governor

Executive Order

NUMBER SEVENTY-ONE (2020)

ESTABLISHMENT OF THE VIRGINIA COASTAL RESILIENCE TECHNICAL ADVISORY COMMITTEE

Importance of Initiative

In response to the growing threat of natural hazards and sea level rise in the Commonwealth, I issued Executive Order 24, Increasing Virginia's Resilience to Sea Level Rise and Natural Hazards, in 2018. This Order, instructed the Chief Resilience Officer (CRO), with the assistance of the Special Assistant to the Governor for Coastal Adaptation and Protection (SACAP), to create and implement a Coastal Resilience Master Plan (Master Plan). The Master Plan will guide coastal adaptation and protection efforts, align state programs, and prioritize local and regional projects. In October 2020, I approved the Virginia Coastal Resilience Master Planning Framework (Framework), which outlines the guiding principles, goals, and actions necessary to create a full Master Plan.

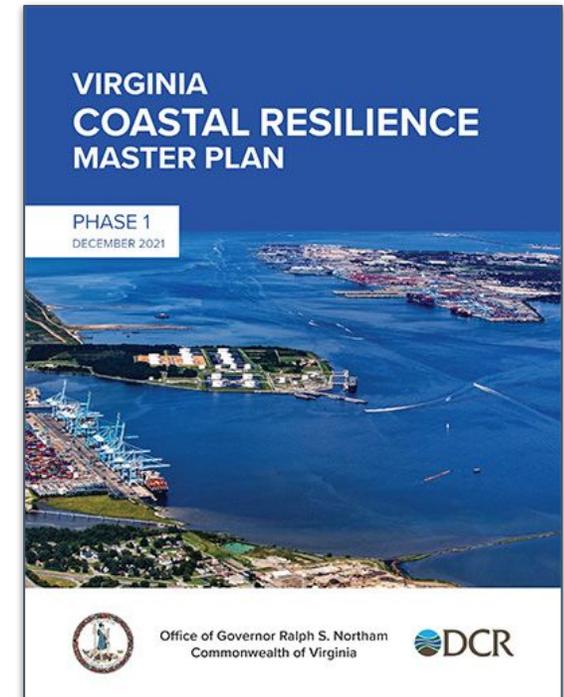
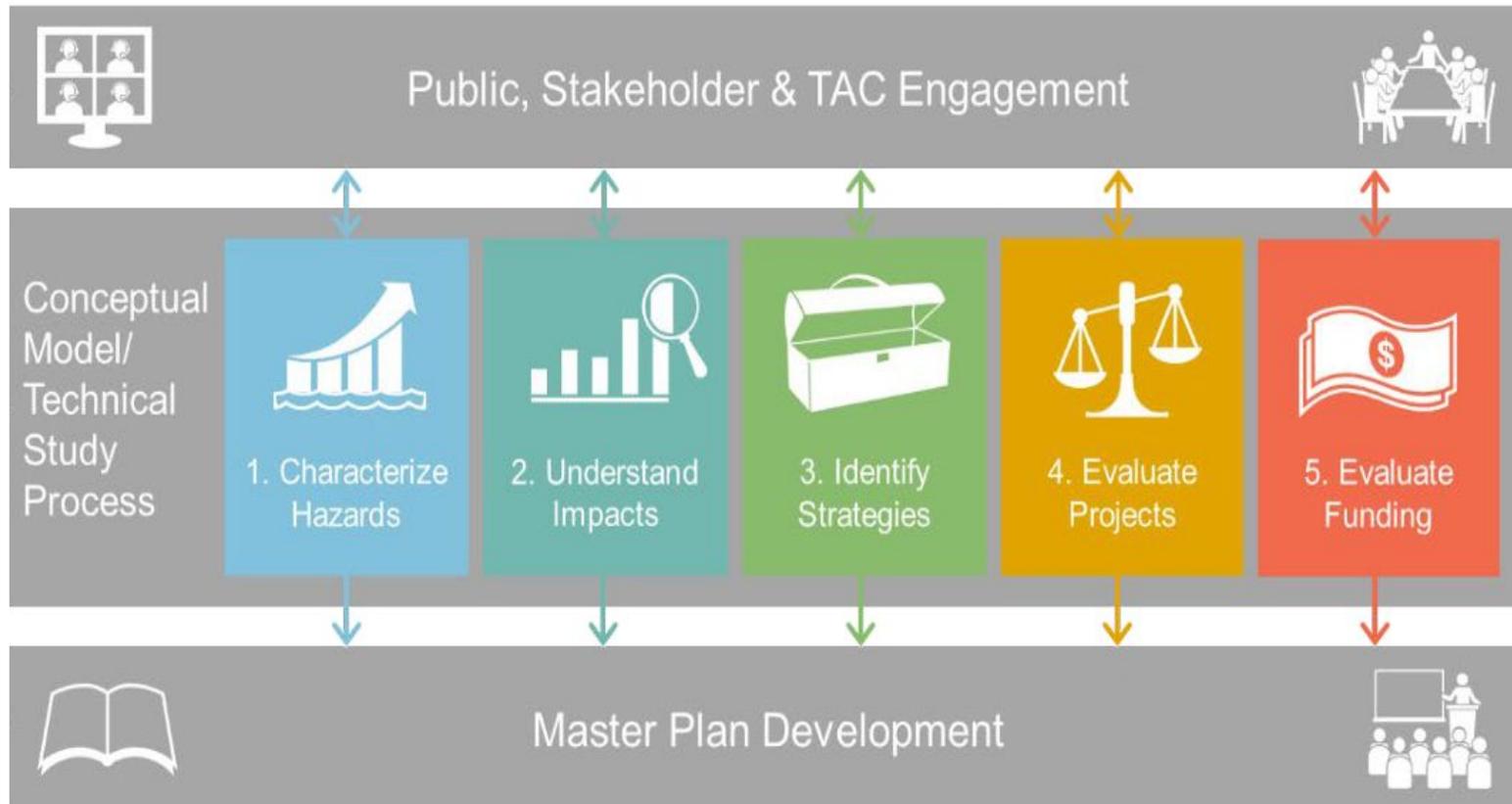
Since coastal resilience and protection encompasses many policy initiatives, state agencies, and federal resources, a significant amount of coordination is required to protect Virginia's Coastal Regions as defined in the Framework. Creating the Virginia Coastal Resilience Technical Advisory Committee (TAC) will help facilitate that coordination. The TAC will support the CRO and the SACAP in evaluating coastal adaptation and protection project proposals, facilitating project implementation, and developing updates to the Master Plan.

Directive to Establish the Virginia Technical Advisory Committee

Protecting Virginia's coastal communities requires thoughtful collaboration among state, local, and regional leaders, federal partners, scientific experts, and stakeholders. The TAC will facilitate this coordination and develop recommendations for specific, place based, prioritized coastal adaptation and protection strategies. Therefore, by virtue of the authority vested in me as Governor, under Article V of the Constitution of Virginia and §§ 2.2-134 and 2.2-135 of the

EO71 - Nov 2020

Phase 1 Schedule



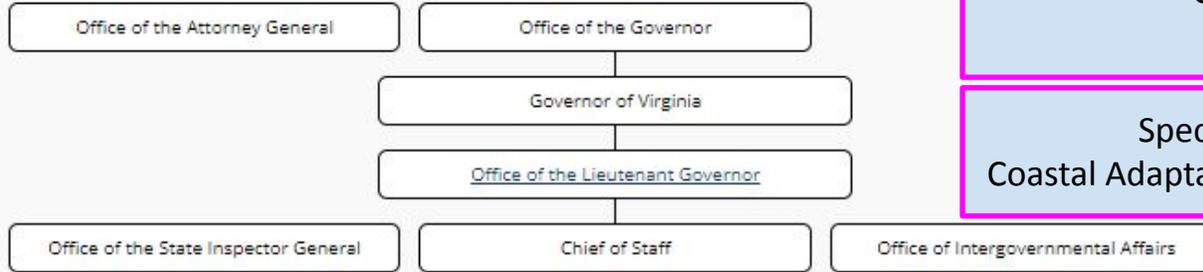
March 2021

December 2021

Who?

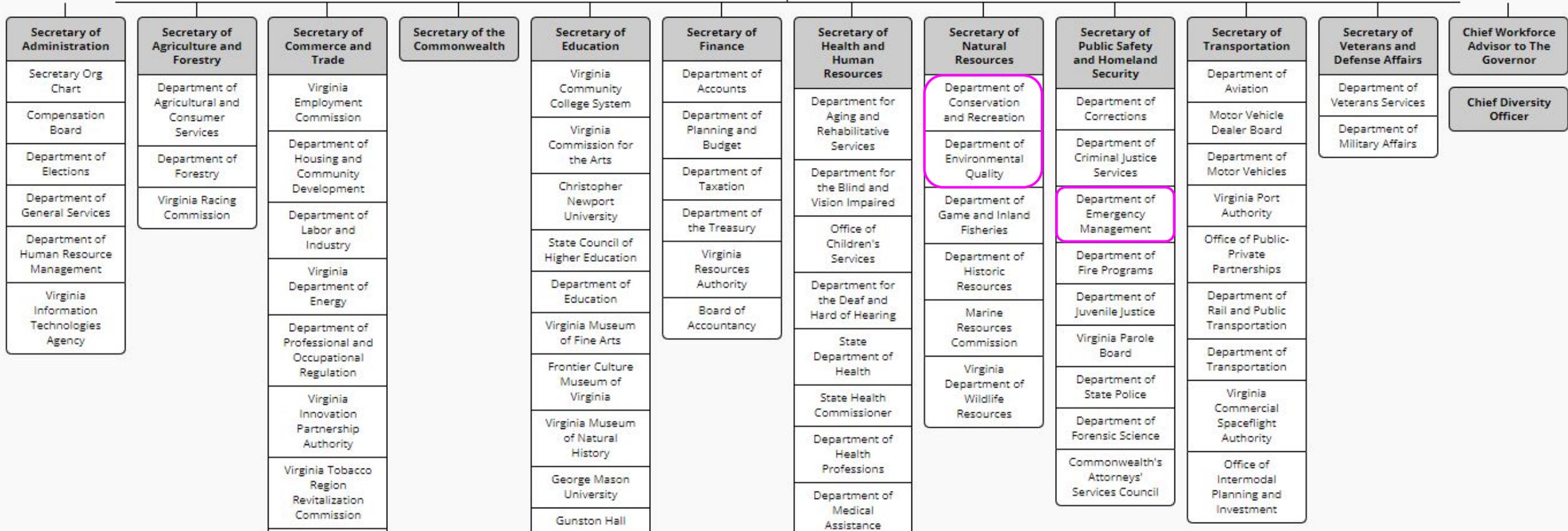


Executive Branch

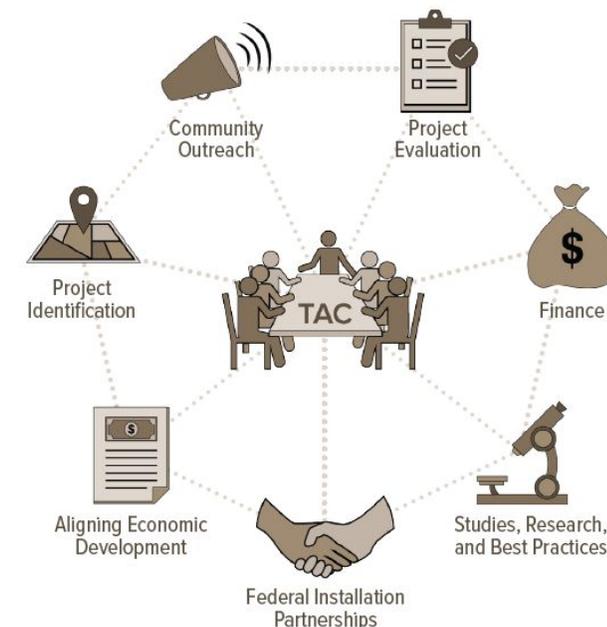
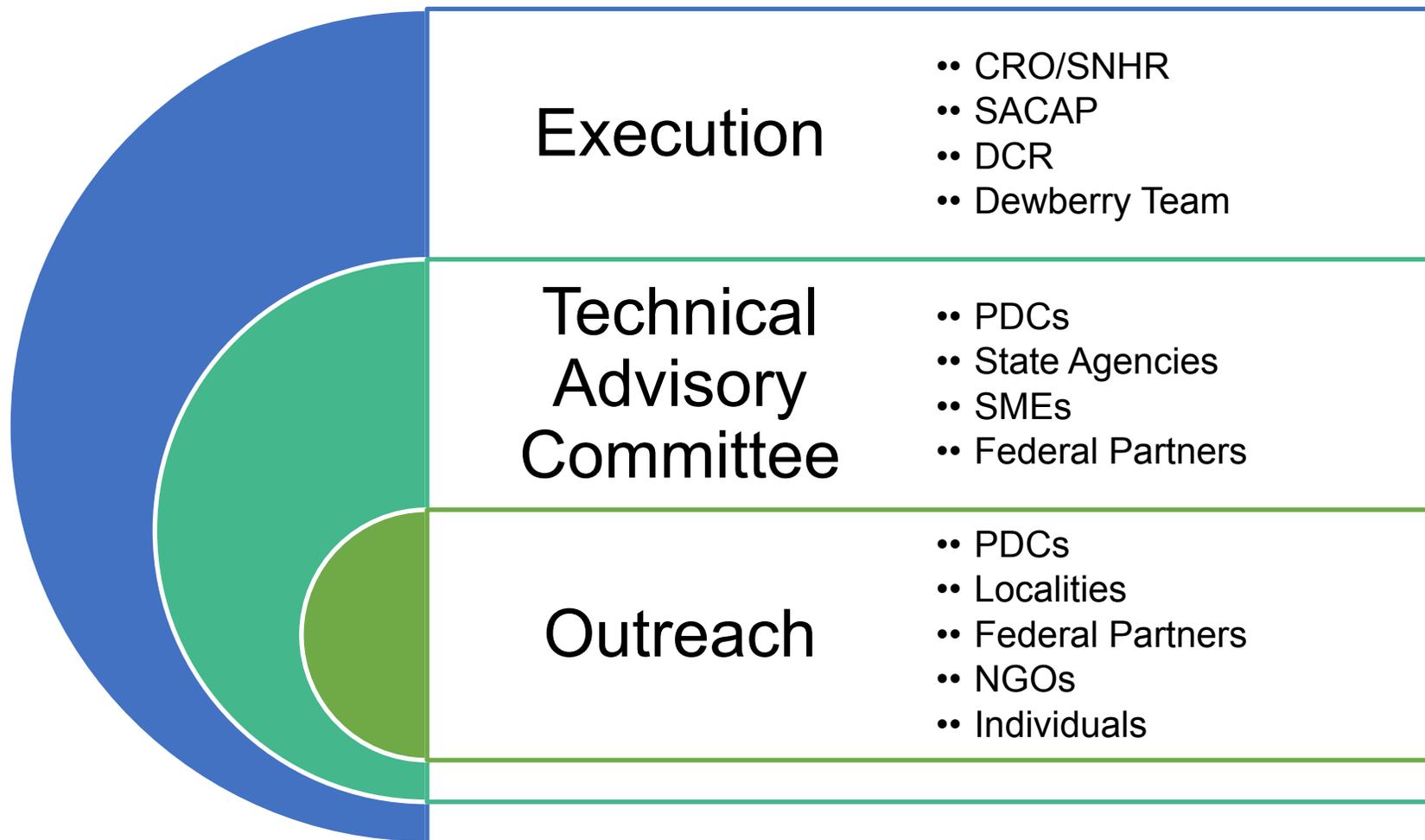


Chief Resilience Officer (CRO)
§ 2.2-222.4.>§ 2.2-220.5.

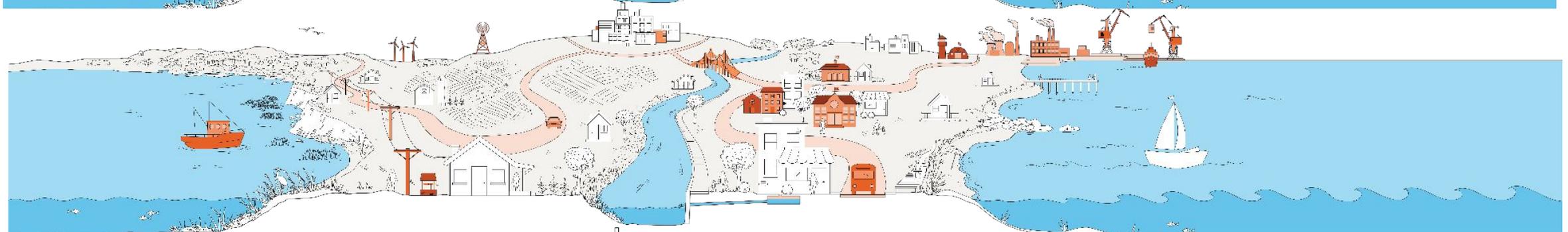
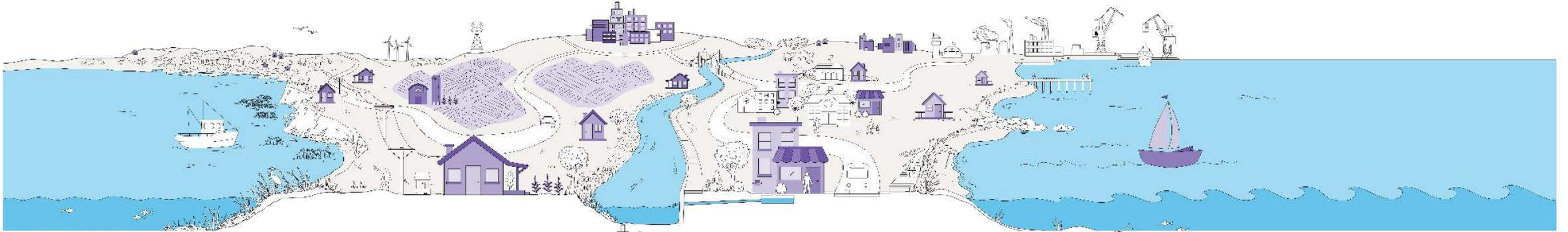
Special Assistant to the Governor for Coastal Adaptation and Protection (SACAP) § 2.2-435.11.



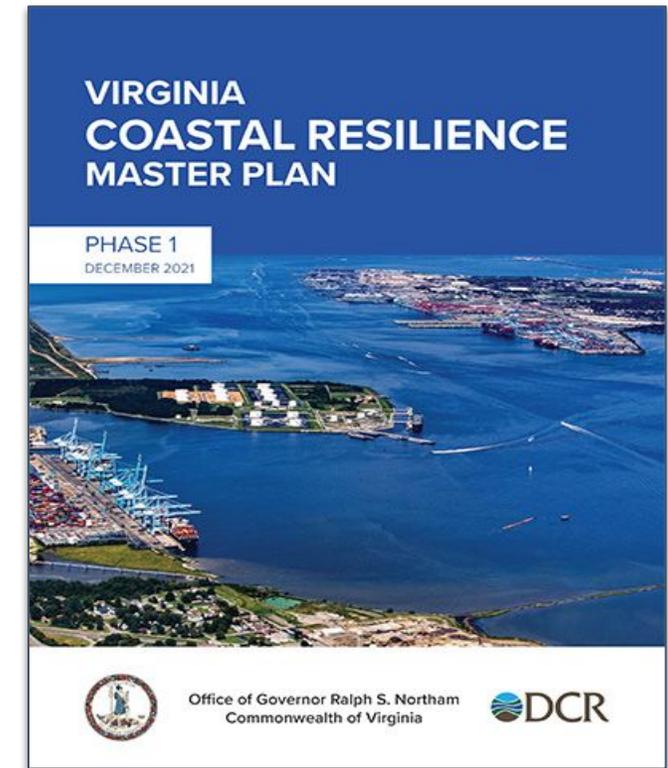
Roles and Responsibilities



Opportunities for Improvements



Adaptive Program Management



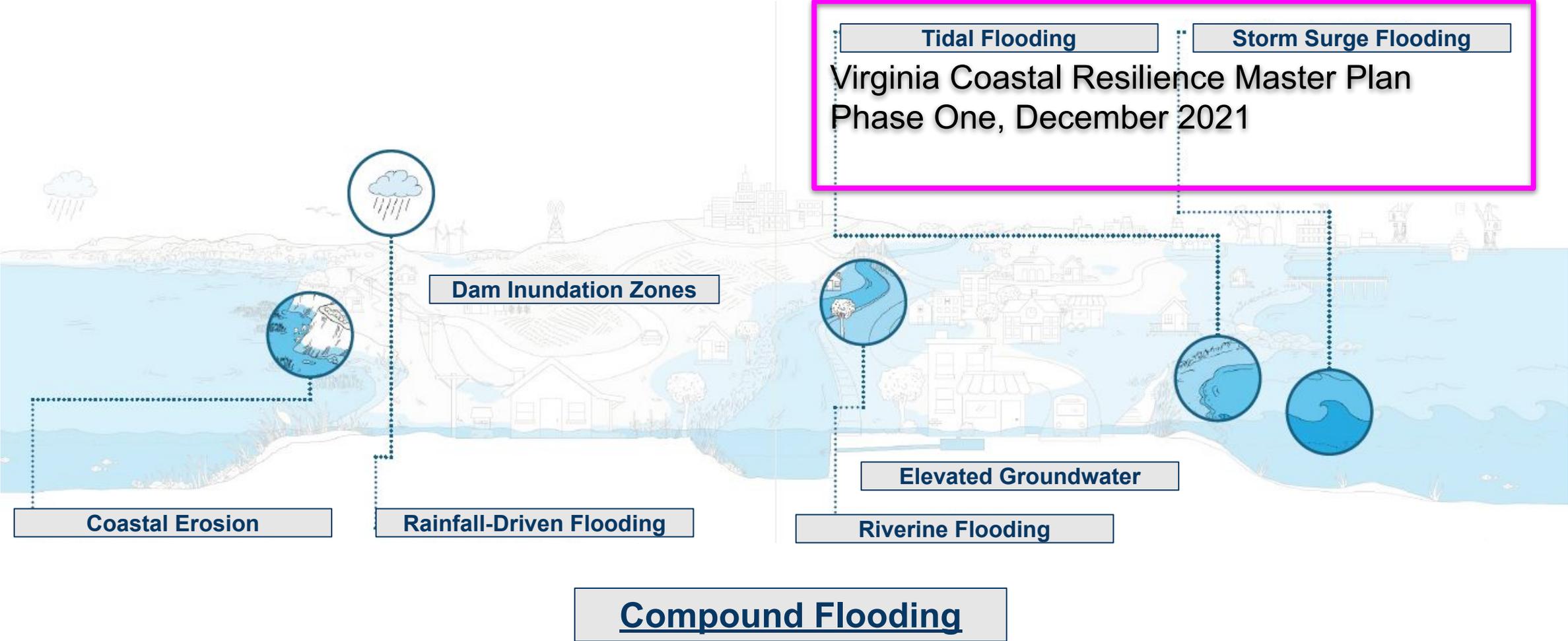
Public, TAC, & Stakeholder Engagement

Communication, Coordination, Collaboration



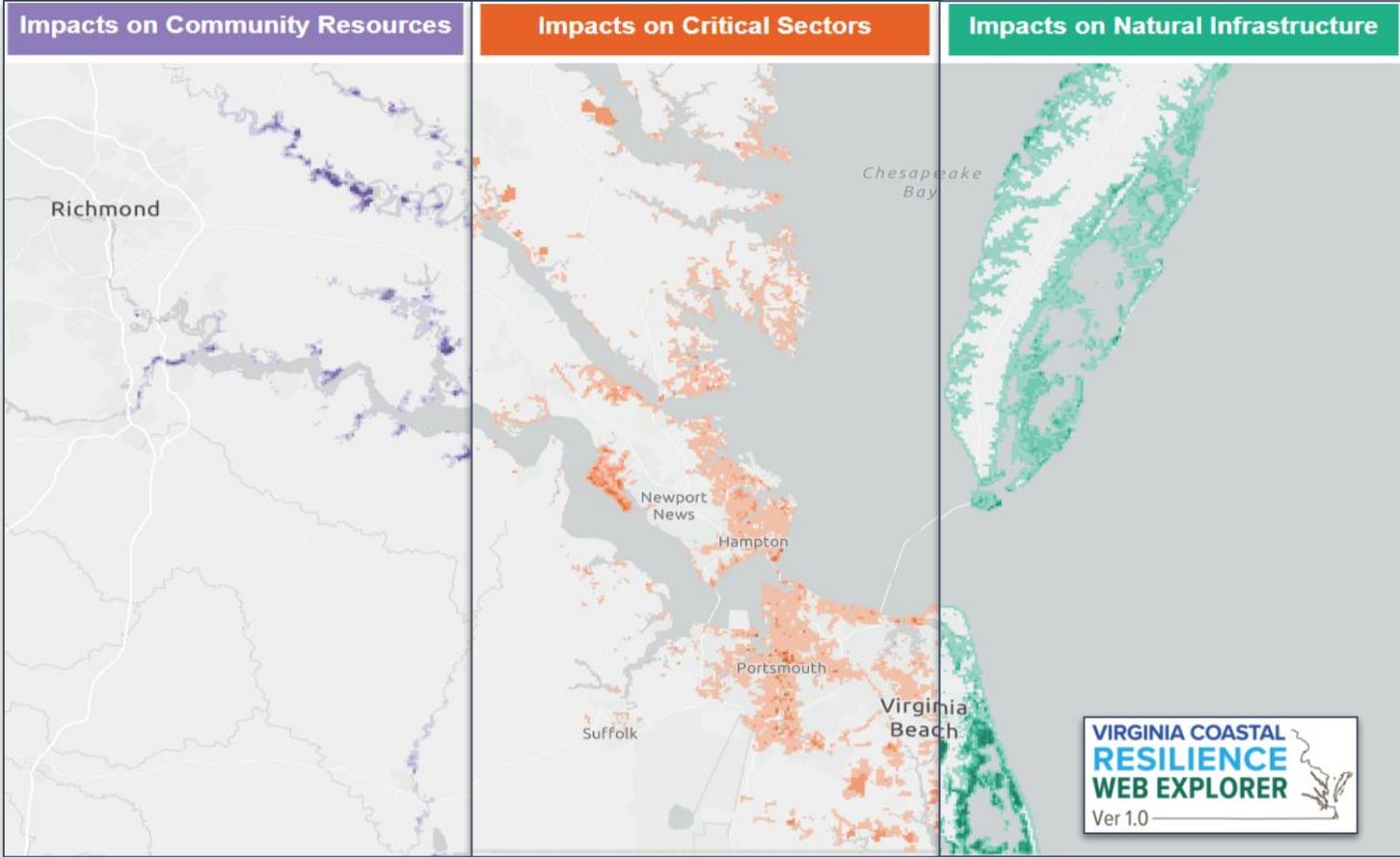
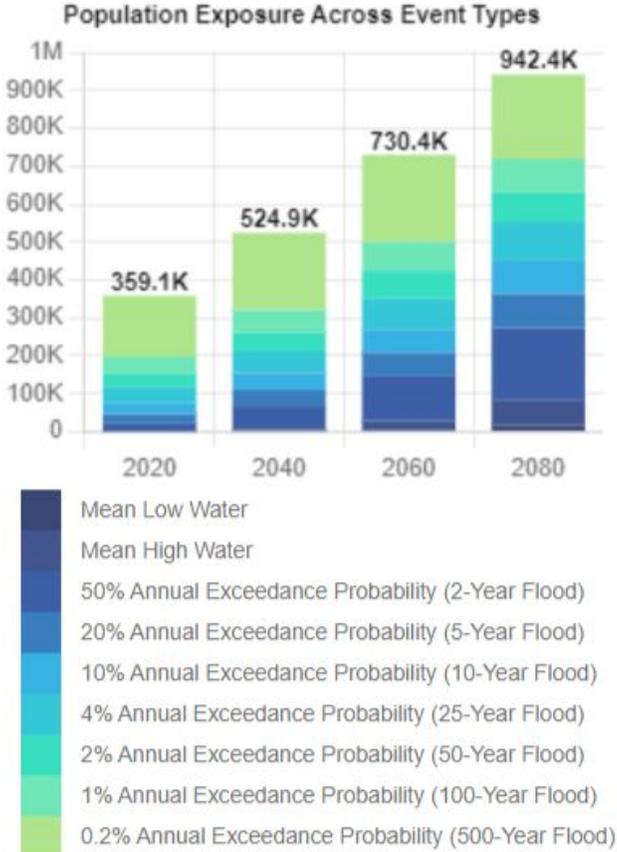
Technical Study - Hazards

Non-stationarity



Technical Study - Impacts

Data Collection, Suitability, and Communication

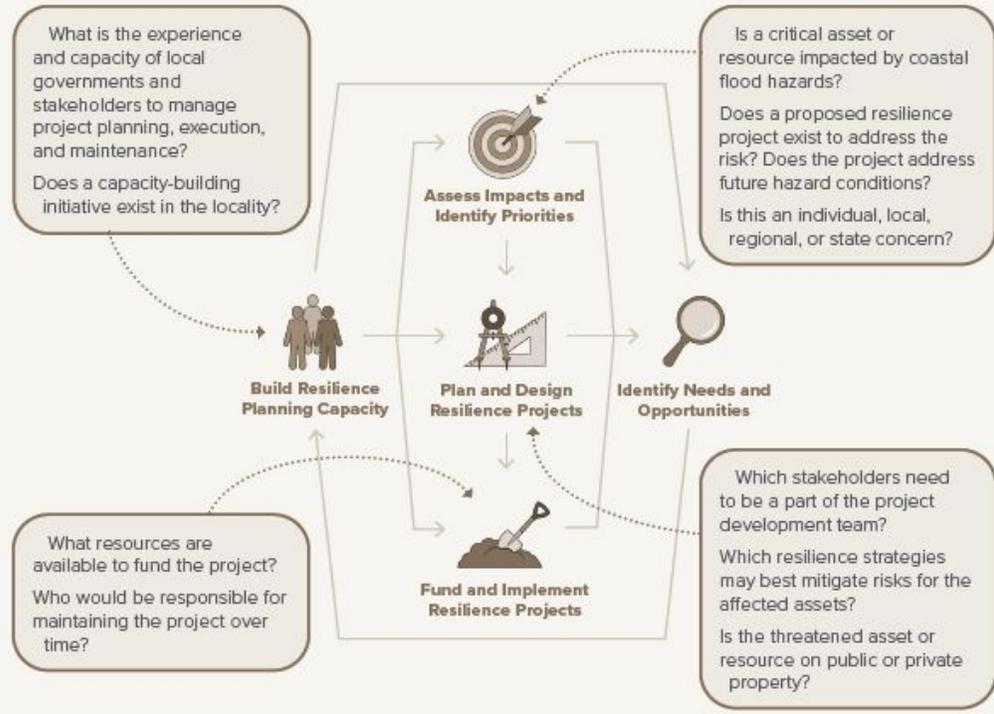


Technical Study – Project Identification

Project Development and Input into Database

Identifying and Developing Projects for Impact Hotspots

Future phases of the Master Plan must establish a standardized process for developing projects for impact hotspots that lack ongoing or proposed efforts. The process should leverage the preliminary project evaluation approach to determine priority impact areas and relevant adaptation strategies that are best suited to protect the affected assets. The following graphic illustrates some of the considerations this process should account for and how it may relate to the development of resilience projects and capacity-building initiatives.



Select Area of Interest: Commonwealth Virginia

Search: Clear

Projects and Initiatives (Features: 517, Selected: 0)

Filters:

Category: All

Hazard Addressed: All

Project Class: All

Reset All Filters & Map

Additional Map Layers: Clear Map Layers

- Coastal Floodplains +
- Community Resource Impact Areas +
- Critical Sector Impact Areas +
- Natural Infrastructure Impact Areas +
- Coastal Hazard and Social Vulnerability +

Search Results:

- Name
- 18th Street Drainage Improvements
- 1. Crow's Nest Peninsula and Estuary Conservation
- 2019 FMA
- 5th Street Improvements
- Aberdeen Gardens Drainage Improvements
- Aberdeen Road Disconnect Wet Pond
- Aberdeen School Neighborhood Park ED Wetland Retrofit
- Amherst Road Wetlands
- Annual Coastal Bays seagrass restoration
- Appomattox River Trail (blueway and greenway)
- Aquatic Center Parking Lot
- Aquisition of LIDAR Data
- Aragona Drainage Improvements

Technical Study – Project Evaluation

Project Attributes and Benefit

Guiding CRMP principles

Acknowledge
climate
change

Reduce
socioeconomic
inequities

Prioritize
natural
infrastructure

Maximize
regional-scale
planning

Prioritize
cost-effective
projects

Approaches:



Quantitative
Assessment



Qualitative
Assessment



Expert
Evaluation



Participatory
Scoring

Technical Study – Funding Evaluation

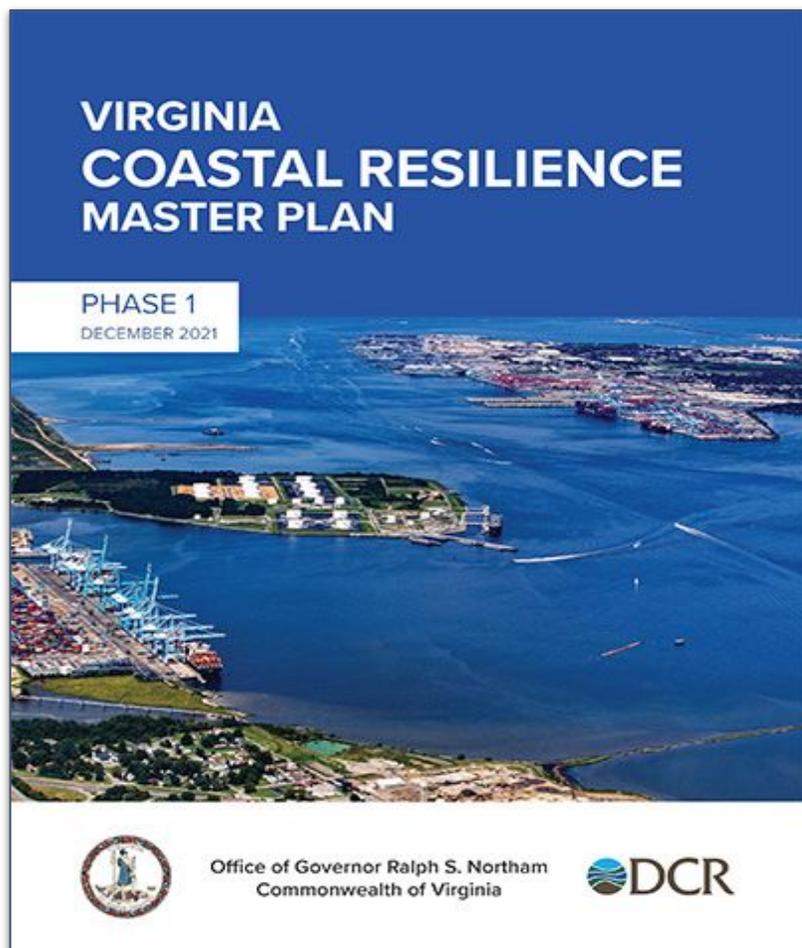
Fiscal Realities and Funding Priorities

Federal Agency	Program	Capacity Building and Planning	Natural and Nature Based Features	Structural	Hybrid
U.S. Army Corps of Engineers	Continuing Authorities Program		X	X	X
Federal Emergency Management Agency	Building Resilient Infrastructure and Communities	X	X	X	X
	Hazard Mitigation Grant Program			X	
	Flood Mitigation Assistance	X	X	X	X
National Oceanic and Atmospheric Administration	Coastal Zone Management Program	X	X		
U.S. Department of Agriculture	Natural Resources Conservation Services	X	X		
U.S. Department of Defense	Joint Land Use Studies	X			
	Readiness and Environmental Protection Integration		X		
	Sentinel Landscapes	X	X		
U.S. Department of Housing and Urban Development	Community Development Block Grants			X	
U.S. Fish and Wildlife Service	National Coastal Wetlands Conservation Grants		X		
	Coastal Grants Program	X	X	X	X
Environmental Protection Agency	Clean Water State Revolving Fund			X	
	Drinking Water Revolving Fund			X	
	Water Infrastructure Finance and Innovation Act		X	X	X
	Chesapeake Bay Implementation Grants	X		X	

State Agency	Program	Capacity Building and Planning	Natural and Nature Based Features	Structural	Hybrid
Department of Conservation and Recreation	Community Flood Preparedness Fund	X	X	X	X
	Land Conservation Foundation Grants		X		
	Virginia Land Preservation Tax Credit		X		
	Land and Water Conservation Fund Grants		X		
	Dam Safety, Flood Prevention, and Protection Assistance Fund	X		X	
	Virginia Natural Resource Commitment Fund	X	X		
Department of Environmental Quality	Clean Water Revolving Loan Fund			X	
	Stormwater Local Assistance Fund	X	X	X	X
Department of Forestry	Virginia Trees for Clean Water		X		
Secretary of Natural and Historic Resources	Water Quality Improvement Fund		X	X	X
Virginia Marine Resources Commission	Marine Habitat and Waterways Improvement Fund			X	
Virginia Port Authority	Virginia Waterway Maintenance Grant Fund	X		X	
Virginia Resources Authority	Virginia Pooled Financing Program	X	X	X	X

Master Plan and Application

Know your Audience, IT Resources

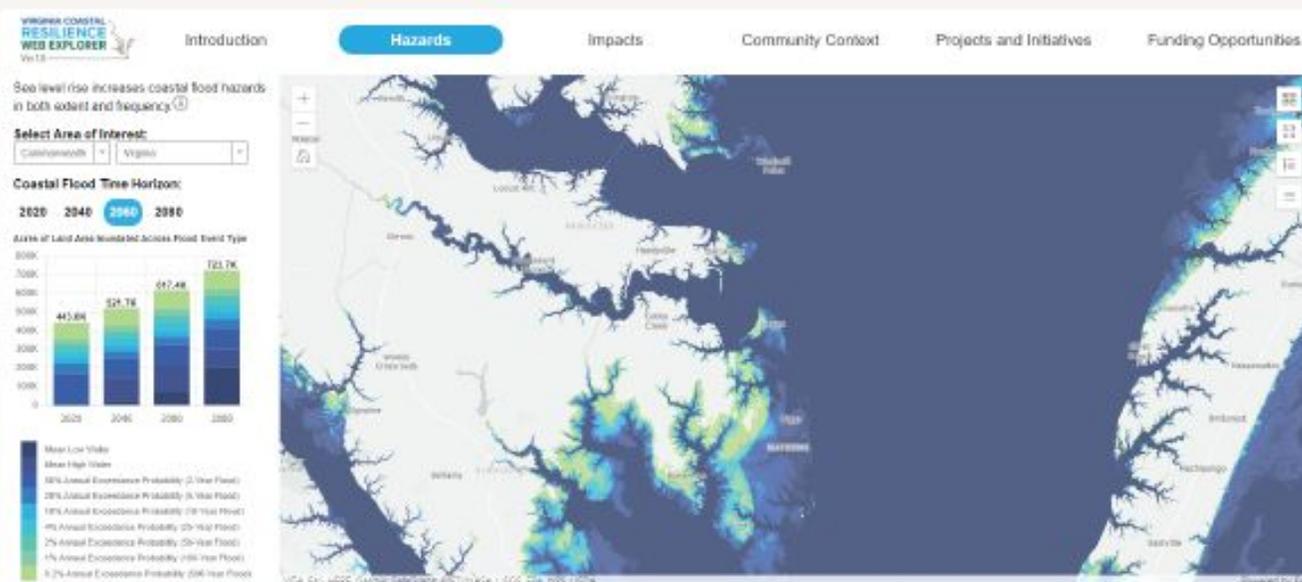


Learn More through the Coastal Resilience Web Explorer



The Coastal Resilience Web Explorer is a publicly available tool that provides access to maps, data, and other relevant technical information developed through the Master Plan's Technical Study and housed in the Coastal Resilience Database. This online resource features a map-based data viewer for flood exposure and impacts, an inventory of resilience project and capacity-building initiatives that highlights potential funding sources identified by the Master Planning process, and a database of identified funding and financing programs that support coastal resilience efforts.

Visit the Coastal Resilience Web Explorer at <https://www.dcr.virginia.gov/crmp/ResilienceExplorer>.



<https://www.dcr.virginia.gov/crmp/plan>

QUESTIONS



Website:

dcr.virginia.gov/crmp/

Email Questions or Comments to:

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